ISSN 2733-6740 (Print)
ISSN 2733-6880 (Electronic)

Jurnal Konseling dan Pendidikan

Volume 14 Number 2 (2026)
https://doi.org/10.29210/1212300

Article

Barriers to counseling and education on hypertension prevention related to cardiovascular risks

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Article History

Received: 19 May 2026
Revised: 25 Jul 2026
Accepted: 30 Jul 2026

Keywords:

Hypertension,
Counseling,
Health education,
Cardiovascular risk,
Health promotion

ABSTRACT

Hypertension is one of the leading risk factors for cardiovascular disease, contributing to high rates of morbidity and mortality worldwide. This study aims to identify factors that hinder the implementation of counseling and education for hypertension prevention related to cardiovascular risk. The study employed a quantitative approach with a descriptive design. Data were collected through questionnaires administered to respondents who met the study criteria and were then analyzed using descriptive statistics to describe the distribution of each barrier. The results of the study indicate that barriers to the implementation of counseling and education are influenced by various factors, including healthcare workers time constraints, patients low knowledge and motivation, limited educational materials, communication barriers, and a lack of institutional support in terms of resources and policies. These factors contribute to the low effectiveness of information dissemination and the adoption of hypertension prevention behaviors by the community. This study concludes that improving the quality of counseling and education requires adequate resource support, enhanced competencies of healthcare workers in educational communication, the provision of appropriate educational materials, and the strengthening of institutional policies to support the sustainable implementation of hypertension prevention programs. These findings are expected to serve as a basis for developing more effective health promotion strategies to reduce the risk of cardiovascular disease.

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Introduction

Hypertension is a major risk factor for cardiovascular disease and is often asymptomatic; therefore, primary and secondary prevention through counseling and health education are important strategies for reducing the burden of cardiovascular disease. Although educational interventions have been shown to be effective in improving knowledge and changing risky behaviors such as reducing salt intake, increasing physical activity, and managing body weight (Bawornthip et al., 2025), their implementation in routine practice is often hindered by organizational and health system barriers. Limited resources, inadequate facilities, restricted service hours, and low community outreach reduce

access to health education and result in missed opportunities for the early detection and prevention of hypertension (Widyaningsih et al., 2022). The rising prevalence of hypertension among adults and older adults underscores the need for robust health promotion and prevention efforts, particularly through lifestyle modifications and the management of modifiable risk factors, such as obesity, excessive salt intake, physical inactivity, smoking, and stress (World Health Organization, 2023). However, the implementation of these preventive strategies is often hindered by barriers originating from both patients and healthcare providers, including limited knowledge, ineffective communication, health system constraints, psychological factors (e.g., stress and depression), and poor follow-up adherence (Aungsuroch et al., 2021; Elnaem et al., 2022; Zhong et al., 2024).

According to the World Health Organization (2023), approximately 1.28 billion adults worldwide suffer from hypertension, and nearly two-thirds of them live in developing countries, including Indonesia, based on a national report on the diagnosis, education, and control of hypertension. Results from the 2023 Indonesian Health Survey show that the prevalence of hypertension among people aged 18 and older reached approximately 34.11%, meaning that more than one-third of the adult population in Indonesia suffers from high blood pressure, yet only 8.6% have been diagnosed by a doctor. Hypertension prevalence is also substantial among younger adults in Indonesia, with 10.7% of individuals aged 18 24 years having hypertension based on blood pressure measurements according to the 2023 Indonesian Health Survey (Health Development Policy Agency, 2023). These findings highlight the need to strengthen preventive interventions among populations at risk, including healthcare workers such as nurses, who are exposed to occupational stressors and other cardiovascular risk factors.

Nurses, who serve as frontline workers in hospital settings, face a higher risk of hypertension due to behavioral factors (unhealthy eating habits, lack of physical activity), environmental factors (shift work, psychosocial stress, pollution), and medical factors (hypertension, obesity) (Asman, Fatimah, et al., 2025). A systematic review covering the years 2020 through 2023 identified work-related stress and night shifts as major factors that increase cardiovascular risk among workers, including nurses, leading to reduced productivity and premature death, thereby highlighting the importance of multidisciplinary counseling in reducing cardiovascular risk (Mills et al., 2020; Mulure et al., 2024). Common behavioral risk factors among nurses include unhealthy eating habits (high intake of salt, fat, and fast food), excessive caffeine consumption, lack of physical activity, and smoking or irregular alcohol consumption. From a medical perspective, nurses are also at risk for hypertension, obesity, dyslipidemia, and diabetes mellitus, all of which are risk factors believed to contribute to cardiovascular disease (Mills et al., 2020; Sujarwoto et al., 2025).

The work environment in hospitals that operate on a shift system particularly night shifts can disrupt the circadian rhythm, which in turn increases blood pressure, heart rate, sleep disturbances, and psychosocial stress among nurses (Hustrini et al., 2026). Studies focusing on nurses show that night shifts are significantly associated with high levels of work-related stress and reduced sleep quality, which contribute to an increased long-term cardiovascular risk. In addition, workplace environmental factors such as exposure to noise, air pollution, and high workloads in inpatient and emergency departments can also exacerbate cardiovascular burden (Lee et al., 2023; Rabiei et al., 2021). Therefore, educational initiatives that include counseling and hypertension prevention education are necessary for nurses in high-risk work environments, given that nurses not only serve as healthcare providers but also constitute a workforce group facing significant risks for hypertension and cardiovascular disease (Asman, Handayani, et al., 2025).

Counseling and education on hypertension prevention have been proven effective in reducing the risk of hypertension and its complications. However, in practice, implementation is often hindered by three main factors: nurses lack of knowledge regarding educational modules, limited educational resources (such as the absence of brochures, modules, electronic media, or dedicated counseling rooms), and a heavy workload due to a large number of patients, tight shift schedules, and documentation requirements (Augusto et al., 2022). Although some studies indicate that counseling and education can improve knowledge, attitudes, and healthy behaviors as well as lower blood

pressure, the success of these interventions depends heavily on the availability of time, management support, and nurses ability to conduct counseling on a routine basis (Falcão et al., 2023; Stephen et al., 2022). In addition to providing an up-to-date perspective on barriers to cardiovascular disease prevention, these findings highlight the need for a predictive approach combined with health education and equitable access to services to reduce socioeconomic disparities and improve the success of hypertension prevention and control (Kubielas et al., 2026).

The provision of counseling and education on hypertension prevention by nurses is a critical component of cardiovascular disease risk management; however, its effectiveness is still influenced by various barriers at the individual, organizational, and health care system levels, which impact the success of health promotion and behavioral change among patients. Empirical evidence from the past five years indicates that nurses also face a high burden of cardiovascular risk factors, including hypertension, low physical activity, and sedentary lifestyles, while nurse-led interventions have been shown to be effective in improving patients blood pressure control and promoting healthy lifestyle behaviors, as well as access to cardiovascular health services (Sujarwoto et al., 2025). However, previous studies have largely focused on the prevalence of hypertension, risk factors, or the effectiveness of interventions, and thus have not specifically identified the factors that hinder the implementation of counseling and education for hypertension prevention in healthcare practice. Therefore, this study aims to analyze the factors that hinder counseling and education for hypertension prevention related to cardiovascular risk as a basis for developing more effective health promotion implementation strategies, such as hypertension education and management (Dhungana et al., 2021; Hustrini et al., 2026). In addition to providing an up-to-date perspective on barriers to cardiovascular disease prevention, this study highlights the need for a predictive approach combined with health education and equitable access to services to reduce socioeconomic disparities and improve the success of hypertension prevention and control (Kubielas et al., 2026).

The results of a study conducted by Laily and Tualeka (2023) show a significant association between work-related fatigue and blood pressure ($r = 0.659$). In addition, night shifts and high levels of work-related fatigue can contribute to elevated blood pressure among nurses. Among individuals with hypertension and low educational levels, 60% of nurses fall into the moderate occupational risk category, with key factors including work-related fatigue, heavy workloads, and biological exposures (such as needle sticks, contact with blood, and biological fluids). This physical and psychological fatigue has the potential to increase chronic stress, sleep disturbances, and changes in eating patterns, which ultimately become risk factors for hypertension and cardiovascular disease among the nurses themselves (Feng et al., 2024). This situation also explains why the implementation of counseling and preventive education on hypertension in the workplace is often neglected, as nurses focus more on immediate clinical tasks than on educational activities that require additional time. This study analyzes the factors that hinder hypertension prevention counseling and education related to cardiovascular risk among nurses in the workplace in Jakarta, using a qualitative design to identify structural and behavioral barriers. The results of this study are expected to support occupational health policies in hospitals to improve the effectiveness of interventions and the regulation of information for healthcare workers, particularly those working in intensive care units.

Methods

This study employed a quantitative analytical approach with a cross-sectional design. It involved 60 respondents selected through nonprobability sampling using a total sampling design. The sample was selected using purposive sampling of nurses working in intensive care units (ICU, CVCU, ED, and HCU), with at least one year of work experience, and who were involved in providing counseling and education on hypertension prevention. This method was chosen because it allows for the selection of respondents with direct experience in providing counseling and education on hypertension prevention, thereby ensuring they can provide information relevant to the study s objectives. The research instrument consisted of a questionnaire on barriers to counseling and education for hypertension prevention, which was designed by the researchers and developed based on the Health

Promotion Model and the results of a literature review. When the instrument was adapted from previous research, the adaptation process involved the following stages: forward translation, backward translation, content equivalence assessment by a panel of experts (expert review), readability testing (face validity), and a pilot test on respondents with characteristics similar to the study population. Validity test results showed that all items had a calculated r value > table r (0.30), while the reliability test showed a Cronbach s alpha of 0.87, indicating that the instrument has adequate validity and reliability for measuring factors that hinder counseling and education on hypertension prevention related to cardiovascular risk.

Results and Discussion

The results are presented descriptively to provide an overview of the respondents' characteristics and the major barriers to implementing counseling and education on hypertension prevention among nurses. A total of 60 nurses who met the inclusion criteria participated in this study. The demographic and occupational characteristics of the respondents are presented in Table 1 summarizes the characteristics of the study sample and the research setting, followed by the distribution of the identified barriers.

Table 1. Characteristics of the study respondents (n = 60)

Characteristic	Description
Sample size	60 nurses
Study design	Cross-sectional quantitative study
Sampling technique	Purposive sampling
Work setting	Intensive Care Unit (ICU), Cardiovascular Care Unit (CVCU), Emergency Department (ED), and High Care Unit (HCU)
Inclusion criteria	Nurses with 1 year of work experience who were involved in providing counseling and education on hypertension prevention

Table 1 presents the characteristics of the study respondents. A total of 60 nurses participated in the study. All respondents worked in intensive care settings (ICU, CVCU, ED, and HCU), had at least one year of work experience, and were involved in providing counseling and education on hypertension prevention. Following the presentation of the study sample, the major barriers identified from the respondents are presented and discussed. Following the presentation of the study sample, the main barriers to implementing counseling and education on hypertension prevention were analyzed using descriptive statistics. The distribution of the identified barriers is presented in Table 2, providing an overview of the relative contribution of each barrier reported by the respondents.

Table 2. Distribution of Major Barriers to Counseling and Education on Hypertension Prevention (n = 60).

Rank	Barrier	Frequency (n)	Percentage (%)
1	Heavy workload	25	42
2	Limited facilities	15	25
3	Psychological factors	11	18
4	Institutional policies	6	10
5	Social factors	3	5

As presented in Table 2, heavy workload was identified as the most frequently reported barrier (42%), followed by limited facilities (25%), psychological factors (18%), institutional policies (10%), and social factors (5%). These findings indicate that organizational and workplace-related factors were more dominant than individual or social factors in hindering the implementation of counseling and education on hypertension prevention among nurses. To complement the numerical data presented

in Table 2, Figure 1 provides a visual representation of the distribution of the major barriers to counseling and education on hypertension prevention among nurses.

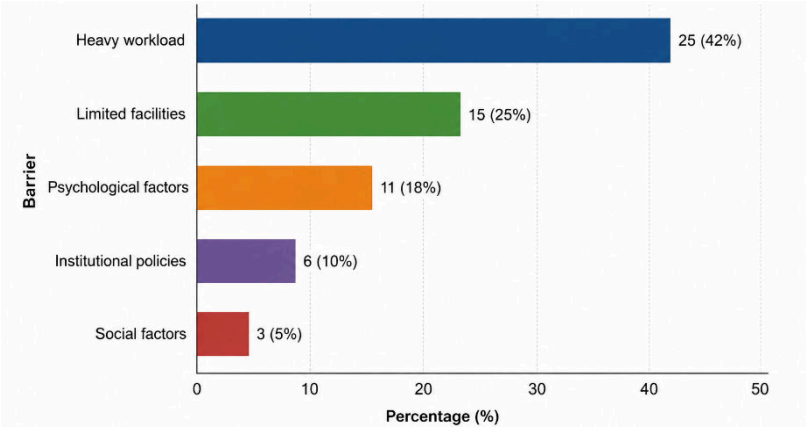

Figure 1. Distribution of Major Barriers to Counseling and Education on Hypertension Prevention

Figure 1 visually confirms that heavy workload was the dominant barrier reported by respondents, followed by limited facilities, psychological factors, institutional policies, and social factors. The graphical presentation reinforces the descriptive findings presented in Table 2 by highlighting the relative magnitude of each identified barrier. These descriptive findings provide the basis for a more in-depth discussion of how the identified barriers interact and influence the implementation of counseling and education on hypertension prevention among nurses.

This study shows that barriers to providing counseling and education on hypertension prevention among nurses are a complex phenomenon influenced by the interaction between individual, occupational, organizational, and health care system factors. These findings do not indicate that limited knowledge is the sole major barrier, as most respondents already possessed good knowledge of hypertension prevention and had an adequate understanding of cardiovascular risks. However, these capabilities have not been fully realized in optimal counseling practice due to structural barriers, particularly high workloads, time constraints, and a lack of workplace support (Gallione et al., 2022; Stephen et al., 2022).

Based on a synthesis of these findings, the main patterns of barriers can be categorized into five conceptual domains. First, the domain of individual capacity, which includes knowledge, work experience, and risk perception. Nurses with a good understanding of hypertension tend to be better prepared to provide education, but this readiness is influenced by the health care system s ability to provide opportunities for counseling. These findings support the Knowledge-to-Action (KTA) Framework, which explains that knowledge does not automatically translate into changes in practice when contextual barriers exist within the implementation environment (Kalbarczyk et al., 2021). Consistent with this framework, previous studies have identified multiple barriers to effective hypertension management, including high salt intake, non-adherence to treatment due to the use of traditional medicines, purchasing medications without a prescription, confusion regarding antihypertensive medications, low levels of physical activity, and limited health monitoring and education (Aungsuroch et al., 2021). Second, workload and job demands emerged as the most significant barriers. High workloads, long working hours, and staff shortages result in nurses spending more time on curative activities than on promotive-preventive activities. This finding is consistent with various studies showing that high job stress among nurses is associated with reduced opportunities for therapeutic communication, patient education, and chronic disease prevention practices (Aiken et al., 2018; Wang et al., 2024). In the context of this study, extreme workload emerged as the primary barrier because it directly reduces the time available for both individual and group counseling. Additionally, various other barriers were identified, including high salt intake, nonadherence to treatment due to the use of traditional medicines, purchasing medications without

a prescription, confusion regarding the use of antihypertensive medications, low physical activity, and limited health monitoring and education (Aungsuroch et al., 2021). Third, the aspects of organizational support and facility readiness indicate that the success of counseling depends not only on nurses competencies but also on a work environment that supports these practices. Limited counseling space, a lack of digital educational resources, and suboptimal management support can hinder the integration of hypertension education into routine care. These findings are consistent with the Consolidated Framework for Implementation Research (CFIR), which identifies organizational readiness, resource availability, and the implementation climate as critical factors in the successful implementation of health interventions (Damschroder et al., 2022; Kononowech et al., 2021). Fourth, psychological factors such as burnout, stress, and low motivation also pose barriers to the implementation of health education. Nurses experiencing emotional exhaustion tend to have limited psychological energy to engage in additional activities beyond their primary clinical duties. These findings are consistent with research showing that workplace burnout among healthcare workers is associated with a decline in the quality of communication, job satisfaction, and engagement in health promotion activities (Aust et al., 2024; Çivilida et al., 2024; Quesada-Puga et al., 2024). Fifth, organizational social and cultural factors including the perception that nurses must always be strong and capable of handling health issues independently can lead to a lack of openness regarding personal health issues. Such professional norms have the potential to hinder nurses participation in occupational health prevention programs. These findings expand our understanding that healthcare workers themselves also require a health promotion approach that takes into account aspects of work culture and professional identity (Damschroder et al., 2022).

Theoretically, the findings of this study support the Social Ecological Model, which states that health behaviors are influenced by factors at various levels, ranging from the individual level to organizational policy (Eriksson et al., 2025). This study shows that increasing nurses knowledge alone is not sufficient to improve the implementation of hypertension counseling if barriers at the organizational and policy levels are not addressed. Thus, the theoretical contribution of this study is to provide an understanding that the implementation of hypertension prevention counseling is a process influenced by the dynamic relationship between individual capabilities and the capacity of the health care system (Dhungana et al., 2021).

The findings of this study also expand upon previous research on the role of nurses in the management of hypertension. Many previous studies have shown that nurse-led interventions are effective in improving blood pressure control, medication adherence, and healthy lifestyle behaviors among patients with hypertension (Mills et al., 2020). However, these studies primarily focused on the effectiveness of such interventions, rather than on the barriers nurses face when implementing them. This study addresses this gap by identifying contextual factors that cause a mismatch between evidence-based practice recommendations and actual implementation in the field (Hustrini et al., 2026).

Several limitations should be considered. First, the cross-sectional study design limits the interpretation of causal relationships between barriers and the implementation of counseling. Second, data were collected via self-report questionnaires, so there may be perceptual or social bias. Third, the limited sample size and specific research context may limit the generalizability of these findings to the nursing population in other health care facilities. It is recommended that further research be conducted using a longitudinal design or a mixed-methods approach to explore the mechanisms of these barriers in greater depth and to evaluate the effectiveness of organizational interventions.

Based on the research findings, the recommendations are intended not only to enhance nurses knowledge but also to bring about changes in the healthcare system. Healthcare institutions need to allocate specific time for patient education, improve the distribution of nursing staff, integrate health counseling indicators into performance evaluations, provide digital educational resources, strengthen leadership support, and develop occupational health programs that actively involve nurses. This systemic approach is necessary so that counseling and education on hypertension prevention can

become a routine part of nursing practice and contribute to reducing the risk of cardiovascular disease (Falcão et al., 2023).

The Relationship between Nurses Workload and Barriers to Counseling and Hypertension Prevention Education Among Nurses in the Intensive Care Unit

These findings indicate that there are barriers to the implementation of counseling and education for nurses in intensive care units, which are influenced not only by individual knowledge but also by working conditions. Intensive care units are characterized by a high patient load, emergency situations, and the need for rapid responses, so educational activities are often delayed or conducted briefly (Asman, Fatimah, et al., 2025). Time constraints and high workloads with extreme workloads being the primary factor (42%) according to a previous study by Hajizadeh et al. (2021) in the United States indicate that long work shifts can increase the risk of burnout by up to 35% among nurses, thereby reducing their priority on self-care education (Giraldo et al., 2021).

Nurses workload is a major factor hindering the implementation of counseling and education on hypertension prevention in intensive care units. High job demands, a 12-hour shift system, and staff shortages result in nurses having limited time and energy to participate in health education programs. This leads to low nurse participation in counseling activities, as the majority of their working hours are focused on caring for critically ill patients (Asman, Handayani, et al., 2025). Furthermore, a heavy workload can increase work-related stress as well as physical and mental fatigue (chronic fatigue), which in turn reduces nurses motivation to maintain their own health, including participating in hypertension prevention education. In intensive care units, high work pressure makes nurses more vulnerable to cardiovascular health problems due to prolonged fatigue and a lack of occupational health management (Chang et al., 2021; Hunawa et al., 2023).

A study conducted by Murharyati et al. (2023) shows that high workloads among ICU and ED nurses can affect the quality of interpersonal communication and the delivery of nursing care. Additionally, a study by Hunawa et al. (2023) reveals that the majority of ICU nurses experience heavy workloads, which are associated with increased work-related stress. Other studies also indicate that an imbalance between workload and capacity, as well as working hours, is a primary source of stress for nurses in the ICU and ED. These findings indicate that high workloads not only affect nurses psychological well-being but also have the potential to compromise the quality of nursing care, patient safety, and team effectiveness. Therefore, efforts are needed to optimally identify and manage nurses workloads to ensure their well-being is maintained and the quality of care in the ICU and ED is sustained (Martyastuti et al., 2019).

The findings of this study are consistent with the concept of providing integrated work programs, in which nurses heavy workloads are a major factor hindering the effectiveness of counseling and education on hypertension prevention in intensive care units. Therefore, support from hospital management is needed through workload management and an increase in the number of nursing staff (Hunawa et al., 2023).

The Relationship between Limited Facilities and Barriers to Hypertension Prevention Counseling and Education Among Nurses in the Intensive Care Unit

Limited facilities have a significant impact on the challenges faced by nurses in intensive care units when providing counseling and education on hypertension prevention. Inadequate facilities such as the absence of dedicated counseling rooms, a lack of digital educational resources, and limited health promotion tools in the workplace hinder the optimal implementation of the educational process. In an ICU environment characterized by high activity levels and complex working conditions, facility limitations make it difficult for nurses to access health education on a regular basis (Almarhabi et al., 2024). Furthermore, these facility limitations also affect the effectiveness of communication and the level of comfort during counseling sessions. A crowded and unproductive work environment often leads to educational activities being postponed or conducted briefly, resulting in suboptimal information delivery. This situation leads to low participation by nurses in hypertension prevention programs and reduces awareness of the importance of cardiovascular health (Elnaem et al., 2022).

The findings of this study indicate that limited workplace facilities and a lack of resources in intensive care units are associated with increased workloads and reduced effectiveness of health programs for healthcare workers. This study explains that an unsupportive work environment makes it difficult for healthcare workers to participate in occupational health education and promotion programs. Other research indicates that a lack of supportive facilities including training rooms and digital learning resources is a major barrier to implementing health programs in hospitals. This situation leads to low participation by healthcare workers in preventive education activities (Qureshi et al., 2022). Furthermore, a study by Laurent et al. (2021) explains that inadequate working conditions and limited occupational health facilities can increase work-related stress and fatigue and reduce the quality of life for healthcare workers in ICUs. This has a direct impact on the low motivation of healthcare workers to participate in health counseling and education programs (Hajizadeh et al., 2021).

The study s findings indicate that facility limitations (25%) reflect gaps in hospital infrastructure, with only 40% of facilities having dedicated occupational health rooms. This hinders the use of digital media such as educational websites or interactive simulations, which have been shown to effectively increase knowledge about hypertension by up to 25% in the precede-proceed (Hustrini et al., 2026). Thus, facility limitations are a major factor hindering the implementation of counseling and preventive education on hypertension for nurses in intensive care units. Consequently, hospitals need to provide adequate supporting facilities, such as dedicated counseling rooms, digital educational media, and an integrated workplace health promotion system, so that health education can be more effective and nurse participation can increase (Martyastuti et al., 2019).

The Relationship between Facility-Related Psychological Factors and Barriers to Counseling and Hypertension Prevention Education Among Nurses in the Intensive Care Unit

A more stable psychological condition can boost nurses' motivation to participate in counseling and health education. Research shows that burnout experienced by healthcare workers in intensive care units is closely linked to high job-related stress, emotional exhaustion, and reduced quality of life. This study highlights the importance of psychological interventions and relaxation in maintaining healthcare workers' mental health (Augusto et al., 2022).

Findings from a study by Laurent et al. (2021) indicate that burnout experienced by healthcare workers in intensive care units is closely associated with high levels of work-related stress, emotional exhaustion, and a decline in quality of life. This study underscores the importance of psychological interventions and relaxation techniques for maintaining the mental health of healthcare workers. One intervention that can be implemented is progressive muscle relaxation (PMR), a technique aimed at reducing stress and improving psychological well-being. PMR helps reduce muscle tension, alleviate anxiety, and improve nurses sleep quality and work concentration (Khir et al., 2024).

Research findings indicate that psychological factors (18%) are associated with burnout, with a prevalence of 52% among Indonesian nurses (Widyaningsih et al., 2022), highlighting the need for interventions to reduce emotional exhaustion and increase nurses motivation to participate in counseling and hypertension prevention education. Work-related exhaustion among ICU nurses is generally characterized by physical fatigue, emotional stress, decreased concentration, and reduced work motivation due to the high demands of caring for critically ill patients. These conditions cause nurses to tend to neglect their own health, including becoming less active in health promotion programs and cardiovascular disease prevention (Asman, Handayani, et al., 2025). The psychological factor of burnout is significantly associated with barriers to counseling and hypertension prevention education among nurses in intensive care units. The implementation of interventions such as progressive muscle relaxation, psychosocial support, and workplace stress management programs is crucial for improving nurses mental health, motivation, and participation in preventive health programs.

The Relationship between Institutional Policies and Social Factors with Barriers to Counseling and Hypertension Prevention Education Among Nurses in the Intensive Care Unit

The results of the study indicate that institutional policies (10%) and social factors (5%) constitute systemic barriers to the implementation of counseling and education on hypertension prevention for nurses in intensive care units. The absence of a mandatory occupational health program in hospitals contradicts Regulation of the Minister of Health of the Republic of Indonesia No. 44 of 2021 on the Implementation of Occupational Health, which emphasizes the importance of protecting the health of healthcare workers through promotive and preventive programs in the workplace. The lack of structured policies has resulted in health education not yet becoming a routine part of the work system for nurses in the ICU (Anjum et al., 2024).

In addition, social factors particularly the cultural stigma that nurses must be strong cause many nurses to suppress their physical and psychological complaints and make them reluctant to seek medical help. This cultural norm reflects the social and patriarchal pressures within the nursing profession, where healthcare workers are expected to always appear resilient even when experiencing work-related fatigue and emotional stress. As a result, nurses participation in counseling and health education programs remains low.

A study conducted by Giraldo et al. (2021) revealed that the lack of organizational support and workplace health policies is a major factor contributing to low participation of healthcare workers in health promotion programs at hospitals. The study also found that institutions without clear workplace health policies tend to have higher levels of burnout and job-related stress among healthcare workers (Aiken et al., 2018).

Another study conducted by Feng et al. (2024) shows that the work culture in hospital settings often pushes healthcare workers to hide their emotional vulnerabilities to maintain professionalism. This situation leads to low help-seeking behavior and increases the risk of mental health issues as well as cardiovascular diseases among nurses. Another study also found that healthcare worker participation in hypertension education programs only reached 35%, influenced by time constraints, lack of institutional support, and low motivation among healthcare providers. These results are still better compared to a recent study showing a participation rate of just 28%, highlighting the need for more effective intervention innovations (Putra et al., 2023).

Research by Hunawa et al. (2023) also explains that interventions using multimedia and digital health education have been shown to increase the participation of young healthcare workers in health promotion programs because these methods are more flexible, easily accessible, and aligned with the characteristics of young adults. Digital educational media such as interactive videos, mobile apps, and e-learning platforms are considered effective in improving health knowledge and awareness among healthcare workers. Thus, the low participation of ICU nurses in hypertension prevention counseling and education is influenced by a combination of institutional policies and socio-cultural factors. Therefore, stronger occupational health policy support is needed, along with the development of low-cost multimedia-based educational interventions so that health programs are easier to access and accepted by nurses, especially among late adolescents and young adults (Frehywot et al., 2013; Muralitharan et al., 2021).

The study's findings show that institutional policies (10%) and social factors (5%) are systemic. The absence of mandatory programs goes against the Ministry of Health Regulation No. 44/2021 on Occupational Health, while the stigma that 'nurses have to be strong' reflects patriarchal cultural norms that suppress expressions of vulnerability. The participation rate remained relatively low, highlighting the need for innovative, low-cost multimedia-based educational interventions to improve nurses' engagement in occupational health programs, particularly among younger nurses (Nor et al., 2021).

Conclusions

The findings of this study expand the theoretical understanding of healthcare workers well-being by showing that nurses participation in hypertension prevention counseling and education is

influenced not only by individual factors, such as knowledge and attitudes, but also by interactions with structural conditions in the workplace. The barriers identified reflect the relationship between job demands, organizational resources, and psychological factors, which collectively influence nurses ability to access and participate in preventive health programs. These findings enrich the perspectives of the Job Demands Resources Model and the Consolidated Framework for Implementation Research by demonstrating that the success of occupational health programs depends not only on the availability of interventions but also on the organizational environment s readiness to support their implementation. However, this study only demonstrates an associative relationship between high workload, time constraints, lack of facility support, and low counseling participation; thus, it cannot yet prove a causal relationship regarding cardiovascular risk. Therefore, further research using a longitudinal or intervention design is needed to test whether increased organizational support, workload management, and more flexible educational models can increase participation and improve nurses cardiovascular health.

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